

EOSDIS Core System Project

Content Description for the ECS External Data Traffic Requirements

NOTE:

- 1. This is an informal working paper intended to formalize the content and format of DID 223. It is being circulated for comments only and is not RIDDABLE. The formal version of DID 223 is planned to be released quarterly, starting in January 1996.*
- 2. Data flow estimates provided in this document have not been approved by the ESDIS CCB yet.*

November 1995

Content Description for the ECS External Data Traffic Requirements

Working Draft

November 1995

Prepared Under Contract NAS5-60000

SUBMITTED BY

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Preface

This is a preliminary working paper draft intended to formalize the contents and format of Data Item Description (DID) 223/SE1. This document is being circulated informally for comments, and coordination purposes only, so that everyone is clear on expectations for the formal DID223. Consequently, this draft is not RIDDABLE. The formal DID 223 is planned to be released, on a quarterly basis, in the first week of January, April, July and October throughout the life of the ECS contract starting in January 1996. Any questions related to this document should be addressed to Sidarth Ambardar at sambarda@eos.hitc.com or to the Data Management Office at:

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Abstract

This document provides the ESDIS Project office, and the NASA Science Internet (NSI) organization with information to size, specify, and budget for the necessary Government Furnished Equipment (GFE) common carrier circuits for use in EOSDIS Core System (ECS) Project. Current best estimates of the ECS-related, real-time and non-real time data flows to be supported for the TRMM and AM-1 missions by the Earth Observing System (EOS) Data and Information System (EOSDIS) backbone network (EBnet) are provided. Additionally the "raw" data flows to be supported by the NSI/Internet interface at each Distributed Active Archive Center (DAAC) are listed. The overhead factors for which ECS has partial responsibility (i.e. factors for TCP/IP overhead and scheduling contingency) and which are used for converting the non-real time "raw" logical flows to "burdened" flows are also provided.

Estimates of the ECS-related data flows have been extracted from the EBnet Traffic Requirements database. This database is populated with information based on the EDOS/ECOM Requirements document, the TRMM Detailed Mission Requirements document (June 1994) and version 2.1 of the Ad Hoc Working Group on Production (AHWGP) scenarios (as expressed in the ECS Technical Baseline of August 1995).

Note: This document will be updated, based on the review comments and the data flow estimates after they are approved by the ESDIS CCB.

Keywords: Inter-DAAC, Real-time, Non Real-Time, EBnet, Production, Reprocessing, Subsetting, AHWGP, NSI, ECS interfaces, Data distribution, SCF, IST, ADC

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1. Introduction

1.1 Identification

This is the preliminary draft of the Content and Format description for the ECS External Data Traffic Requirements document, whose requirements are specified in Data Item Description (DID) 223/SE1. DID 223 is a required deliverable under EOSDIS Core System (ECS) contract (NAS5-60000), attachment D, revision A.

1.2 Scope

This draft describes the content and format for documenting all data flows to and from ECS, that have to be transported on the EBnet and the NSI/Internet Wide Area Networks (WAN) in support of the TRMM and AM-1 missions. Specifically, estimates of the (1) 24-hour average logical data flows, transported to and from all ECS sites, on EBnet and (2) Output data flows on the NSI/Internet interfaces at each DAAC are provided. Current best estimates of the data flows for non-ECS platforms (e.g., V0) are also provided in this document.

The NASA Communications (Nascom) organization is responsible for design, implementation, and maintenance of the EBnet. Consequently, this document does not (1) specify the "burdened" traffic requirements or circuit size requirements for EBnet, (2) provide a topology for the EBnet WAN, since topology will depend on the existing circuit infrastructure, choice of circuit offerings, and the specific plan for migrating from the current V0 topology to the EBnet topology, (3) provide internet connectivity requirements for non-ECS locations, as these are defined and limited by the Earth Science Data and Information System (ESDIS)-NSI Inter-Project Agreement, and (4) provide information on the Local Area Network (LAN) requirements at the ECS-DAACs. The overhead factors for which ECS has partial responsibility (i.e. TCP/IP overhead and Scheduling contingency) are provided. These have been coordinated with Nascom.

1.3 Purpose

The purpose of this document is to provide the ESDIS Project office, the Nascom organization, and the NSI organization with information on the data flow estimates to size, specify, provision and budget for, in a timely manner, the necessary Government Furnished Equipment (GFE) common carrier circuits for use in ECS. This document provides current estimates and assumptions regarding data flow volumes for the EBnet and NSI WANs.

1.4 Status and Schedule

This document is being released once, in order to coordinate the format and contents of DID223. DID223 will be released on a quarterly basis, in the first week of January, April, July and October throughout the life of the ECS contract starting in January 1996.

1.5 Document Organization

This document contains four sections.

- Section 1 identifies the document and describes its scope, purpose and objectives.
- Section 2 identifies parent, applicable, and information documents.
- Section 3 provides an overview of the EBnet WAN. An estimate of the ECS-related data flows to be transported on the EBnet (during the years 1997 to 2000) due to (1) EDOS to ECS-elements data transfers in support of the TRMM and AM-1 missions (2) DAAC to DAAC processing and reprocessing flows in support of the TRMM mission, (3) DAAC to DAAC data flows resulting from standard product generation, reprocessing and subsetting in support of the AM-1 mission (4) User query and Query-responses, and (5) ADC operations is provided.
- Section 4 provides estimates of the data volumes distributed electronically from the DAACs to the science users in the 1997-2000 time frame via the NSI/Internet provider. This includes estimates for the Instrument Support Terminals (IST) data flows and the Science Computing Facility (SCF) Quality Control (QC) data flows.
- Appendix A lists the detailed DAAC to DAAC file transfers required to support the processing, reprocessing, and movement of data from the processing DAAC to the archive DAAC(s), in cases where these are different. Within each DAAC to DAAC flow, each data set to be transferred is indicated, along with the process(es) requiring the transfer. This information is based directly on the AHWGP scenarios.

2. Related Documentation

2.1 Parent Documents

The following documents are the parents from which this document's scope and content derive:

194-301-DV1-002	System Implementation Plan for the ECS Project
423-10-01-0	Goddard Space Flight Center, Earth Science Data and Information System (ESDIS) Project -- Level 2 Requirements, Volume 0
423-10-01-1	Goddard Space Flight Center, Earth Science Data and Information System (ESDIS) Project -- Level 2 Requirements, Volume 1
423-41-01	Goddard Space Flight Center, EOSDIS Core System Statement of Work
423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System

2.2 Applicable Documents

The following documents are referenced herein and are directly applicable to this document. In the event of conflict between any of these documents and this document, this document shall take precedence.

194-219-SE1-001	Interface Requirements Document Between EOSDIS Core System (ECS) and the NASA Science Internet (NSI)
194-219-SE1-002	Interface Requirements Document Between EOSDIS Core System (ECS) and MITI ASTER GDS Project
194-219-SE1-018	Interface Requirements Document Between EOSDIS Core System (ECS) and Tropical Rainfall Measuring Mission (TRMM) Ground System.
none	Goddard Space Flight Center, Earth Science Data and Information System (ESDIS) - NASA Science Internet (NSI) Inter-Project Agreement, April 14, 1994

2.3 Information Documents

The following documents, although not be directly applicable, amplify or clarify the information presented in this document. These documents are non-binding in nature.

828-RD-001-002	Government Furnished Property for the ECS Project
194-TP-313-001	ECS User Characterization Methodology and Results

160-TP-005-001	"Reducing Inter-DAAC Data Transfers Through Subsetting", Draft Technical Paper by A. Endal, September 15,1995
none	"Methodology for Estimating DAAC-to-DAAC User-query Traffic" Draft Working Paper by L. Tyahla, ESSi
none	Review draft of Change 26 to Table 4 of EDOS/ECOM Requirements document

3. EBnet Wide Area Network Flows

3.1 EBnet Overview

The EBnet is a Wide Area Network (WAN) that provides, in combination with other institutional and public networks, connectivity between geographically distributed EOSDIS facilities to support ECS mission operations and data production functions. Specifically, EBnet will provide connectivity between the ECS DAACs, the Earth Observing System (EOS) Data and Operations System (EDOS) facilities, selected ADCs, and other designated EOSDIS sites. The EBnet WAN serves as the interface between EDOS, the DAACs, and NSI. The EBnet WAN will be designed, implemented and maintained by the Nascom organization at GSFC.

3.2 ECS-related EBnet Data Flows for TRMM and AM-1 Missions

The ECS-related data flows to be transported on the EBnet in support of the TRMM and AM-1 missions can be summarized under the following categories:

- Real Time Data Flows
- Non Real Time Data Flows

Estimates of the individual data flows for each of these categories are listed in the following sections. The following notes apply to these estimates:

1. The real time data flows estimates provided in this working paper have been extracted from the EBnet Traffic Requirements database. This information is based on:
 - Review draft of Change 26 to Table 4 of the EDOS/ECOM Requirements document (dated 9/20/95) for the AM-1 mission.
 - TRMM requirements as outlined in the TRMM Detailed Mission Requirements document (June 1994).
 - Impacts of the adaptive downlink architecture are included in the estimates.
2. Only those data flows that are flagged as "touching" ECS are included.
3. The EDOS to ECS-elements data flow estimates have not been approved by ESDIS CCB.
4. The non-real time inter-DAAC data flow estimates are based on the AHWGP scenarios expressed in the August 1995 ECS Technical baseline. The following notes apply to these data flows:
 - Data flows from the TRMM and AM-1 missions only are estimated
 - Data flows from instruments launched after AM-1 mission are not included
 - Data products are subsetted (where appropriate) prior to transfer on EBnet WAN
 - Data flows from the Data Assimilation Office operations at GSFC are included
 - User query and query response data flows (1998-2000) are included

- Data flow estimates represent "raw", 24 hour-average logical flows. No factors for scheduling contingency, circuit utilization, or protocol overhead are applied.
5. The TSDIS to ECS and SDPF to ECS traffic estimates are based on the EOSDIS-TRMM IRD (DCN CH-01, 8/22/95)
 6. The intra-EDC data flows between the Landsat Processing System (LPS), the Image Assessment System (IAS), and the EDC DAAC is extracted from the EOSDIS-Landsat 7 IRD (7/1995)

3.2.1 Real Time Data Flows

A mutual exclusion analysis of the peak real-time data flows was performed. The traffic flows were sorted by source and destination for each year. For each source-destination group only the flow with the highest data rate was included; other flows between the same source and destination pairs have not been listed. Similarly, for the rate-buffered housekeeping traffic flowing to ASTER GDS (Japan) the traffic flows were sorted by source and destination for each year. However, for each source-destination group only that flow with the lowest data rate was included - others were excluded. The lowest peak rate data flow was included because of the three rates specified (16 Kbps, 256 Kbps and 712 kbps), the lowest rate is the one for which a requirement exists. The capability to support data flows at the remaining two rates (256 Kbps and 712 kbps are desirables). Table 3.2.1-1 lists the consolidated peak real time data flows (for the pre-launch operations and the on-orbit phases) to be transported from the source to the destination sites on EBnet for the AM-1 mission.

Table 3.2.1-1. Peak Real Time Data Flows for AM-1 Platform (Kbps)

Source	Destination	1997	1998	1999	2000	Data Type
ASTER GDS (Japan)	EOC	0	10	10	10	Commands / Planning & Scheduling (On Orbit Operations)
ASTER GDS (Japan)	EOC	0	0	0	0	Commands / Planning & Scheduling (Pre Launch Operations)
EDOS at GSFC	ASTER GDS (Japan)	0	16	16	16	Housekeeping Data Stream (On Orbit Operations)
EDOS at GSFC	ASTER GDS (Japan)	32	32	0	0	Housekeeping Data Stream (Pre Launch Operations)
EDOS at GSFC	ECS SMC	0	56	56	56	Operations Management Data (On Orbit Operations)
EDOS at GSFC	ECS SMC	56	56	0	0	Operations Management Data (Pre Launch Operations)
EDOS at GSFC	EOC	0	32	32	32	Housekeeping Data Stream (On Orbit Operations)
EDOS at GSFC	EOC	32	32	0	0	Housekeeping Data Stream (Pre Launch Operations)
EOC	ASTER GDS (Japan)	0	10	10	10	Commands / Planning & Scheduling (On Orbit Operations)

Source	Destination	1997	1998	1999	2000	Data Type
EOC	ASTER GDS (Japan)	0	0	0	0	Commands / Planning & Scheduling (Pre Launch Operations)
EOC	EDOS at GSFC	0	10	10	10	Commands (On Orbit Operations)
EOC	EDOS at GSFC	10	10	0	0	Commands (Pre Launch Operations)

3.2.2 Non-Real Time Data Flows

The following categories of non-real time data flows have to be transported on the EBnet:

- Production Data Flows for TRMM Platform
- Reprocessing Data Flows for TRMM Platform
- Production Data Flows for AM-1 Platform
- Reprocessing Data Flows for AM-1 Platform
- Production and Reprocessing Data Flows for SWS instrument
- Production and Reprocessing Data Flows for DFA instrument
- Production and Reprocessing Data Flows for the DAS
- DAAC to DAAC User Query Flows
- DAAC to DAAC User Query-Response Flows

Estimates of the consolidated "raw" 24 hour average data flows (between the source and the destination points for the AM-1 mission for the years 1997-2000 are listed in Table 3.2.2-1.

Table 3.2.2-1. Non-Real Time Data Flows for AM-1 Platform (Kbps)

Source	Destination	1997	1998	1999	2000
ASF DAAC	EDC DAAC	0.0	0.3	0.5	0.5
ASF DAAC	GSFC DAAC	0.0	0.4	0.5	0.5
ASF DAAC	JPL DAAC	0.0	0.4	0.5	0.5
ASF DAAC	LaRC DAAC	0.0	0.4	0.5	0.5
ASF DAAC	MSFC DAAC	0.0	0.3	0.5	0.5
ASF DAAC	NSIDC DAAC	0.0	0.1	0.1	0.1
EDC DAAC	ASF DAAC	0.0	0.1	0.2	0.2
EDC DAAC	GSFC DAAC	0.0	700.8	1,401.3	2,101.7
EDC DAAC	IAS @EDC	0.0	463.0	463.0	463.0
EDC DAAC	JPL DAAC	0.0	0.3	0.5	0.5
EDC DAAC	LaRC DAAC	6.0	9.7	15.8	18.5

Source	Destination	1997	1998	1999	2000
EDC DAAC	MSFC DAAC	0.0	0.7	1.0	1.0
EDC DAAC	NSIDC DAAC	0.0	0.1	0.2	0.2
EDOS at GSFC	ASTER GDS	0.0	16.0	16.0	16.0
EDOS at GSFC	EDC DAAC	0.0	89,200.0	89,200.0	89,200.0
EDOS at GSFC	EOC	0.0	784.0	784.0	784.0
EDOS at GSFC	GSFC DAAC	0.0	22,034.0	22,034.0	22,034.0
EDOS at GSFC	LaRC DAAC	0.0	12,390.0	12,390.0	12,390.0
EDOS at GSFC	NOAA/MD	0.0	20.0	20.0	20.0
GSFC DAAC	ASF DAAC	0.0	0.2	0.3	0.3
GSFC DAAC	EDC DAAC	0.0	3,302.8	6,605.3	9,909.8
GSFC DAAC	JPL DAAC	0.0	7.0	12.5	14.5
GSFC DAAC	LaRC DAAC	132.3	8,227.1	17,730.4	27,570.8
GSFC DAAC	MSFC DAAC	3,702.3	3,702.7	3,702.9	3,702.9
GSFC DAAC	NSIDC DAAC	0.0	272.7	545.3	817.7
GSFC DAAC	TSDIS	170.2	170.2	170.2	170.2
IAS @EDC	EDC DAAC	0.0	0.1	0.1	0.1
JPL DAAC	ASF DAAC	0.0	0.1	0.1	0.1
JPL DAAC	EDC DAAC	0.0	0.1	0.1	0.1
JPL DAAC	GSFC DAAC	0.0	0.3	4.6	9.0
JPL DAAC	LaRC DAAC	0.0	0.2	0.2	0.2
JPL DAAC	MSFC DAAC	0.0	0.1	0.1	0.1
JPL DAAC	NSIDC DAAC	0.0	0.1	0.3	0.6
LaRC DAAC	ASF DAAC	0.0	0.1	0.1	0.1
LaRC DAAC	EDC DAAC	0.0	139.2	278.3	417.2
LaRC DAAC	GSFC DAAC	0.0	2.9	1,071.0	2,137.6
LaRC DAAC	JPL DAAC	0.0	0.7	1.0	1.0
LaRC DAAC	MSFC DAAC	0.0	0.5	0.6	0.6
LPS @EDC	EDC DAAC	0.0	51,111.1	51,111.1	51,111.1
MSFC DAAC	ASF DAAC	0.0	0.1	0.1	0.1
MSFC DAAC	EDC DAAC	0.0	0.1	0.2	0.2
MSFC DAAC	GSFC DAAC	2,531.2	2,531.9	2,532.3	2,532.3
MSFC DAAC	JPL DAAC	0.0	0.4	0.7	0.7

Source	Destination	1997	1998	1999	2000
MSFC DAAC	LaRC DAAC	127.6	256.0	383.9	383.9
MSFC DAAC	NSIDC DAAC	0.0	0.1	0.1	0.1
MSFC DAAC	TSDIS	605.6	605.6	605.6	605.6
NOAA	GSFC DAAC	6.2	6.2	6.2	6.2
NSIDC DAAC	ASF DAAC	0.0	0.1	0.1	0.1
NSIDC DAAC	EDC DAAC	0.0	33.9	67.8	101.6
NSIDC DAAC	GSFC DAAC	0.0	0.2	0.3	0.3
NSIDC DAAC	JPL DAAC	0.0	0.1	0.1	0.1
NSIDC DAAC	LaRC DAAC	0.0	0.2	0.3	0.3
NSIDC DAAC	MSFC DAAC	0.0	0.1	0.1	0.1
SDPF	LaRC DAAC	10.0	10.0	10.0	10.0
SDPF	MSFC DAAC	6.0	6.0	6.0	6.0
TSDIS	GSFC DAAC	788.2	788.2	788.2	788.2
TSDIS	MSFC DAAC	7,113.1	7,113.1	7,113.1	7,113.1

- Notes:**
1. The data flow estimates listed above are based on information contained in the EBnet Traffic Requirements data base (as provided by Booz Allen and Hamilton on 11/6/95).
 2. Data flows generated during the "on orbit operations" phase for AM-1 mission only are listed in the table.
 3. The estimates may change when modifications related to (a) Landsat-7 traffic on GSFC - EDC link and (b) other pending changes are incorporated in the EBnet Traffic Requirements database.

3.3 Overhead Factors

The data flows described in section 3.2.2 and listed in Table 3.2.2-1 are "raw 24-hour average flows". No overhead factors or burdens of any kind have been applied to these flows. These flows have to be converted into peak flows to specify EBnet circuits sizes. The overhead factors for which ECS has partial responsibility (i.e. factors for TCP/IP overhead and scheduling contingency) and their values are listed below:

- TCP/IP protocol overhead = 25%
- Scheduling contingency = 50%

Agreement on the values used for these parameters is a mutual decision, that has been coordinated between ECS and Nascom. Some of the other comparable factors used by Nascom in the EBnet design are listed below for information purposes only .

- EDOS/ECOM Overhead = 40%
- EDOS Contingency = 25%

Note: Details of these and the overhead factors applied by Nascom in the overall EBnet design process are available from Nascom. These are not listed in this document.

4. NSI Data Flow Estimates at ECS Interfaces

4.1 NSI Overview

The NASA Science Internet (NSI) is an open, international computer network that serves the NASA science and research community. NSI will provide effective network communications between and among EOS researchers, EOS facilities, and the general science community. The NSI connects almost 200 sites worldwide. It interconnects to research, educational, and commercial networks via two Federal Internet Exchanges (FIXes). NSI provides Internet access to the GSFC, EDC, JPL, LaRC, NSIDC, ASF, and the MSFC DAACs. The Internet Protocol (IP) and the associated upper layer protocols are used by NSI to interoperate with ECS.

The NSI is managed by a Network Operations Center (NOC) from the Ames Research Center. The NOC monitors the network 24 hours/day, 7 days/week. The NOC also coordinates with other network provider NOCs to identify any circuit problems and resolve them in a timely manner. Information is transmitted between ECS and NSI to enable network communications and network management. Data to cooperatively provide services such as fault management, security management, and performance management will be shared between NSI and ECS.

4.2 Data Flow to Users at ECS Interfaces

Outflows to users via the ECS-NSI/Internet at each DAAC consists of three data types:

- Archived Products
- IST Data
- QC Data

The current ESDIS policy and ECS technical baseline of August, 1995 is to distribute a data volume equal to 2 times production to the users from each DAAC: 1X via media and 1X electronically over the NSI. The following paragraphs provide estimates of the volume of data to be distributed electronically for each of three categories listed above.

4.2.1 Archived Products Data Flow Estimates

To estimate the volume of data to be distributed electronically the data sets were categorized as follows:

- Version 0 migrated data
- Landsat 7 data
- TRMM, SWS and AM-1 data

The volume of V0 migrated data to be distributed via the network was based upon current DAAC experience and projected changes in the future. Recent trends regarding the data volume distributed from each DAAC as a function of the sizes of the archive and their science user community was analyzed in cooperation with the DAAC personnel. Projections were then made as to how the archive size will increase with the addition of new data between now and 1997 and how the user

community might expand accordingly. Using the current ratio of distributed volume to archive volume and its relationship to the size of the science user community, the volume to be distributed from each DAAC was estimated for the 1997-2000 time frame.

The volume of Landsat 7 data to be distributed was used to be the amount specified in the Landsat data system specification, namely 50 GB/day, for 365 days/year. The volume of TRMM, SWS and AM-1 data to be distributed via networks was assumed to be two times the production plans, half of which would be distributed via networks. The production numbers for TRMM were obtained from the TRMM project, the SWS from the project at JPL, and the AM-1 production estimates for each DAAC as a function of time came from the results of the AHWGP information.

The data volume distributed via networks per year from each of the DAACs, as obtained from the ECS Technical baseline of August 1995, for the April 1997, April 1998, April 1999 and January 2000 epochs, is listed in Table 4.2-1 below.

Table 4.2-1. Data Flows to Users (MB/day) via Networks

From	April 1997	April 1998	April 1999	January-2000
ASF	0	1627	37,130	37,130
EDC	0	15,244	251,353	328,264
GSFC	8,123	9358	297,705	385,785
JPL	0	10,118	9441	9,936
LaRC	2,474	6585	84,182	207,052
MSFC	1,121	15,189	19686	18,703

- Notes:**
1. Data volume distributed equals 1X production for the period indicated.
 2. The volume of V0 migrated data distributed to users is extrapolated from current estimates of the ratio of distributed volume and archive volume at each DAAC.
 3. Landsat-7 data distribution of 50GB/day is included.
 4. The AM-1 and TRMM production volumes are based on input from the AHWGP.
 5. Does not include distribution from V0 DAAC.

4.2.2 IST Data Flow Estimates

The IST toolkit enables PIs and TLs who are not physically located at the EOC to participate in the planning, scheduling, commanding and monitoring of their instruments. The current understanding is that data is transferred between the ISTs and the EOC LAN via the NSI and campus networks. Consequently, no IST to EOC flows are included in the EBnet flows. The data flows exist between the EOC (at Goddard) and sites with ISTs at GSFC, JPL, LaRC, NCAR, Canada, Valley Forge, and Japan. The total data flow between the EOC and these sites for the AM-1 time frame is shown in Table 4.2.2-1. The EOC to IST data flows represent the driving data flows because this data flow is larger than the ISTs to EOC flow.

Table 4.2.2-1. EOC to IST Data Flows for AM-1 Time frame (MB/day)

From	To	Number of ISTs	Transport Network	Data Flow: EOC To ISTs	Data Flow: ISTs to EOC
EOC	GSFC	3	NSI	4,417	378
EOC	JPL	3	NSI	4,417	378
EOC	LaRC	6	NSI	7,032	756
EOC	NCAR	1	NSI	1,933	119
EOC	Canada	1	NSI	1,933	119
EOC	Valley Forge	1	NSI	1,933	119
EOC	Japan	1	NSI	1,933	119
TOTAL				23,598	1,988

- Note:
1. The data flows shown are "raw " flows with no overhead factors applied
 2. The transport network for the EOC to Japan IST data flow is currently under discussion.
 3. The EOC to IST data flow estimation details are documented in Section 5.2.2, "IST Connectivity Trade," of the FOS Design Specification (305-CD-040-001) dated October 1995

4.2.3 SCF QC Data Flow Estimates

The SCFs are used by EOS investigators, team leaders and/or team members to perform functions such as interdisciplinary science, algorithm integration and test, and quality control (QC) of the data products. The current understanding is that the QC function is not "in-line" with production for any SCF associated with TRMM and AM-1 production and that no SCFs require direct connectivity to EBnet. SCFs will use existing campus and NSI/Internet facilities to connect to the DAAC sites. The SCF QC related data flows at the ECS interface to the NSI/Internet from each DAAC, for the years 1997, 1998, 1999, and 2000 epochs, as derived from the GSFC/SPSO "DAAC-to-SCF Data Transfer for QA" spreadsheet, supplied by ESDIS, are shown by instrument, in Table 4.2.3-1. These are provided solely as an extra level of detail. Table 4.2.3-2 presents this same information from a DAAC perspective. These flows are assumed to be contained within the 1X baseline and distribution of this data volume will not cause the total data distributed from any DAAC to exceed the 1X distribution baseline.

Table 4.2.3-1. SCF QC data flows at ECS interface to NSI/Internet

Instrument	Source DAAC	Destination SCF	1997 (MB/day)	1998 (MB/day)	1999 (MB/day)	2000 MB/day)
ASTER	EDC	TBD SCF(s)		1,825	1,228	632
CERES	LaRC	LaRC SCF	24,800	92,692	18,631	2,282
	LaRC	Blackmon	41	41		
	LaRC	Cess	210	210		
	LaRC	Coakley	2,077	17,583	16,890	
	LaRC	Kandel	18	18		
	LaRC	King	324	2,592		
	LaRC	Menzel	2,077	18,967		
	LaRC	Miller	17	17		
	LaRC	Ram	210	210		
	LaRC	Randall	2,676	2,676		
	LaRC	Welch	8,309	68,253	18,967	
LIS	MSFC	MSFC SCF	2,571	2,571	2,571	2,571
MISR	LaRC	JPL SCF		18,467	18,467	17,159
	LaRC	Muller		304	304	304
	LaRC	Davies		377	377	377
	LaRC	Ackerman		29	29	29
	LaRC	Gerstl		304	304	304
	LaRC	Sellers		27	27	27
	LaRC	Gordon		27	27	27
MODIS	EDC	GSFC SCF(s)		46,004	46,004	46,004
	EDC	CRSA (Boston)		23,965	23,965	23,965
	EDC	UCSB		609	609	609
	GSFC	UCSB		12,636	12,636	12,636
	GSFC	GSFC SCF		391,425	391,425	391,425
	GSFC	U of Miami		61,437	61,437	61,437
	GSFC	U of Wisconsin		23,000	23,000	23,000
	GSFC	OSU		1,664	1,664	1,664
	NSIDC	GSFC SCF		2,775	2,775	2,775
	LaRC	OSU		18	18	18
JPL	OSU		47	47	47	
MOPITT	LaRC	NCAR		456	456	456
	LaRC	U of Toronto		176	176	176
	EDC	NCAR		34	34	34
	GSFC	NCAR		236	236	236
TOTAL	All	All	43,330	791,672	642,304	588,194

- Notes:**
1. This data is based on GSFC/SPSO "DAAC-to-SCF Data Transfer for QA" spreadsheet 9/7/95, supplied by ESDIS.
 2. These flows are assumed to be contained within the 1X electronic distribution baseline. Distribution of this data volume is assumed not to cause the total data distributed from any DAAC to exceed the 1X electronic distribution baseline.

Table 4.2.3-2. SCF QC Data Flow at ECS Interface to NSI/Internet by DAAC

Source DAAC	1997 (MB/day)	1998 (MB/day)	1999 (MB/day)	2000 (MB/day)
LaRC	40,759	223,444	74,673	21,159
GSFC		490,398	490,398	490,398
EDC		72,437	71,840	71,244
NSIDC		2,775	2,775	2,775
JPL		47	47	47
MSFC	2,571	2,571	2,571	2,571
Total	43,330	791,672	642,304	588,194

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Appendix A. Detailed DAAC to DAAC Data Transfer Estimates

The attached spreadsheet lists the DAAC to DAAC file transfers required to support processing, reprocessing, and movement of data from the processing DAAC to the archive DAAC, in cases where these are different. The flows are sorted (vertically) by the origin/destination DAACs. Within each DAAC to DAAC flow, each data set to be transferred is indicated, along with the process(es) requiring the transfer. This information is based on the AHWGP scenarios.

The columns in the table are defined as follows:

File ID - Name of the file to be transferred, using the AHWGP nomenclature. Ancillary data File IDs begin with “ANC_”. Instrument data File IDs beginning with a short form of the instrument name (usually, the first three letters in the instrument acronym).

Process ID - Name of the process requiring the identified file as input, or the name of the process which creates the file (in the case of files which are created at a DAAC which is not the archive DAAC). Process IDs follow the AHWGP nomenclature. Most Process IDs begin with a short form of the instrument acronym. CERES processes begin with a number (*e.g.*, 4aV is a CERES process). All processes executed on the TSDIS data system are all labeled “TSDIS”.

Processing Epochs - A lower case letter is used to indicate each quarter in which the identified process is active. The epochs begin with “a” in the first quarter of 1997. (See column headings on right half of each page for association of calendar quarters with their letter designations.)

Daily Volume (GB) - Rate of data production (in gigabytes per day) of data which are produced on a regular basis. For static or irregularly updated data (calibration tables, for instance), this column indicates the total size (in gigabytes) of the file.

Transfer Volume (GB/day) - Raw volume of data to be transferred (in gigabytes per day). In some cases, this is equal to the daily volume of data produced. However, the volume to be transferred may differ from the daily volume entry for one or more of the following reasons:

1. The file is already indicated as being transferred to support another process (*i.e.*, duplicate flows have been eliminated);
2. Although the file is archived at the “from” DAAC, it is produced at the “to” DAAC (the same DAAC where the process needing the file as input is executing). In this case, it is asked that a local copy of the file is maintained until all processes needed the file have run to completion;
3. Only a subset of the data is transferred. The subset volume to be transferred is calculated based on the needs of the process, as described in the ECS technical paper “Reducing Inter-DAAC Data Transfers Through Subsetting” (160-TP-005-001) and
4. The file is static or updated at irregular intervals. In this case, we have used that the file is transferred once per week.

Repro Factor 1 - Multiplier characterizing the first period of reprocessing. For instance, EOS Standard Products are used to be reprocessed at a rate equal to the processing rate (Repro Factor 1 = 1) starting one year after launch; TSDIS products are reprocessed at twice the processing rate starting at launch (Repro Factor 1 = 2).

Repro Epochs 1 - Letter designations for the calendar quarters in which Repro Factor 1 applies.

Repro Factor 2 - Multiplier characterizing the second period of reprocessing. For instance, EOS Standard Products are used to be reprocessed at a rate equal to twice the processing rate (Repro Factor 2 = 2) starting two years after launch.

Repro Epochs 2 - Letter designations for the calendar quarters in which Repro Factor 2 applies.

Remaining Columns - These columns give the calculated raw data transfer rates (in gigabytes per day) for the quarters indicated in the column heading.

File ID	Process ID	Process Name	Processing Epochs	Read/Written	Daily Volume (GB)	Transfer Volume (GB/day)	Repro Factor 1	Repro Epochs 1	Repro Factor 2	Repro Epochs 2	4Q 97	4Q 98	4Q 99	4Q 00
Switch to Include Reprocessing = 1 (0 => no reprocessing, 1 => reprocessing included)														
EDC-to-GSFC														
ANC_EDC_DEM	MOD06:L2:G	Product	ghijklmnopqrstuvwx	1	0.2	0.0285714	1	klmn	2	opqrstuvwxyz	0	0.029	0.057	0.086
	MOD:ATMOS:L2:G	Water Vapor	ghijklmnopqrstuvwx	1	0.2	0								
	MOD11:L2:G	Clouds	ghijkl	1	0.2	0								
	MOD11:L2:M	Properties of Land	mnopqrstuvwxyz	1	0.2	0								
	MOD09:13:L2:G	Reference Temperature	ghijklmnopqrstuvwx	1	0.2	0								
ANC_EDC_LANDCOVER	MOD06:L2:G	Vegetation Indices	ghijklmnopqrstuvwx	0.1	0.25	0.0357143	1	klmn	2	opqrstuvwxyz	0	0.036	0.071	0.107
	MOD:ATMOS:L2:G	Water Vapor	ghijklmnopqrstuvwx	0.1	0.25	0					0	0	0	0
	MOD35:L2:G	Clouds	ghijklmnopqrstuvwx	0.1	0.25	0					0	0	0	0
	MOD11:L2:G	Clouds	ghijkl	1	0.25	0					0	0	0	0
	MOD:ANALYSIS	Final	yz	1	0.25	0.0357143			2	yz	0	0	0	0
	DAS_FINAL_ANALYSIS	Final Analysis	ijklmnopqrstuvwxyz	1	0.25	0								
MU009_L2_G (epochs gn)	MOD09:L2:G	Product (cloud)	ghijklmnopqrstuvwx	1	41.2425	0					0	0	0	0
MOD09_L2_I (epochs ijklmnopqrstuvwx)	MOD10:L2:G	Production of cloud	ghijklmnopqrstuvwx	1	41.2425	0					0	0	0	0
	MOD14:L2:G	Production of Thermal Anomalies	ghijklmnopqrstuvwx	1	41.2425	0					0	0	0	0
MOD09_ALB_LUT_G	MOD09:13:L2:G	Surface Reflectances	ghijklmnopqrstuvwx	1	0.75	0.1071429	1	klmn	2	opqrstuvwxyz	0	0.107	0.214	0.321
MOD09_L3_16DY_G (previous), (ghikl)	MOD09:13:L2:G	Surface Reflectances	ghijklmnopqrstuvwx	1	23.9625	7.18875	1	klmn	2	opqrstuvwxyz	0	7.189	14.38	21.57
MOD11_L2_M (epochs mnopqrstuvwxyz)	MOD14:L2:G	Vegetation Indices	ghijklmnopqrstuvwx	1	12.636	0					0	0	0	0
MOD11_L2_M (epochs mnopqrstuvwxyz)	MOD41:L2:H	Surface Resistance	ijklmnopqrstuvwx	1	12.636	0					0	0	0	0
MOD11_L3_WK_G (previous week)	MOD11:L2:G	Production of Land	ghijkl	1	0.6085714	0.1825714	1	kl			0	0.183	0.365	0
	MOD11:L2:M	Production of Land	mnopqrstuvwxyz	1	0.6085714	0.1825714	1	mn	2	opqrstuvwxyz	0	0	0	0.548
MOD12_L3_3MN_I (gh)	MOD11:L2:M	Production of Land	mnopqrstuvwxyz	1	0.0682389	0					0	0	0	0
MOD12_L3_3MN_I (epochs ijklmnopqrstuvwx)	MOD14:L2:G	Temperature Anomalies of Land	ghijklmnopqrstuvwx	1	0.0682389	0.0204717	1	klmn	2	opqrstuvwxyz	0	0.02	0.041	0.061
MOD12_L3_3MN_I (epochs ijklmnopqrstuvwx)	MOD41:L2:H	Surface Resistance	ijklmnopqrstuvwx	1	0.0682389	0					0	0	0	0
MOD13_L2_G	MOD11:L2:M	Production of Land	mnopqrstuvwxyz	1	15.795	0					0	0	0	0
	MOD14:L2:G	Temperature Anomalies of Land	ghijklmnopqrstuvwx	1	15.795	0					0	0	0	0
MOD14_L2_G (previous)	MOD14:L2:G	Temperature Anomalies of Land	ghijklmnopqrstuvwx	1	15.795	0					0	0	0	0
MOD41_L3_LUT_H	MOD41:L2:H	Surface Resistance	ijklmnopqrstuvwx	1	0.005	0.0007143	1	lmno	2	pqrstuvwxyz	0	7E-04	0.001	0.002
TOTAL											0	7.535	15.07	22.61
EDC-to-LaRC														
ANC_EDC_DEM	MOPL2-C	Level 2 Processing	ghi	1	0.2	0.0285714					0	0.029	0	0
	MOPL2-E	Level 2 Processing	ijklmno	1	0.2	0.0285714	1	klmn	2	o	0	0	0.057	0
	MOPL2-H	Level 2 Processing	pqrstuvwxyz	1	0.2	0.0285714			2	pqrstuvwxyz	0	0	0	0.086
	4aV	cloud	cd	1	0.2	0					0	0	0	0
	4aF	Determine properties cloud	cdef	1	0.2	0.0285714	1	ghij	1	klmn	0.029	0	0	0
	4bAV	Determine properties cloud	gh	1	0.2	0					0	0	0	0
	4bAF	Determine properties cloud	yz	1	0.2	0.0285714			2	yz	0	0	0	0
	5aV	Properties Radiative	efghijklmnop	1	0.2	0					0	0	0	0
	5cAV	Atmos. Flux Radiative	ghijklmnop	1	0.2	0					0	0	0	0
	5aF	Atmos. Flux Radiative	efghijklmnop	1	0.2	0					0	0	0	0
	5cAF	Atmos. Flux Radiative	ghijklmnop	1	0.2	0					0	0	0	0
	7aT	Time	efghijklmnop	1	0.2	0					0	0	0	0
	7c	Multi-Sat Interpolate Merge, Time	ghijklmnop	1	0.2	0					0	0	0	0
ANC_EDC_LANDCOVER	4aV	Interpolate cloud	cd	1	0.25	0					0	0	0	0
	4aF	Determine properties cloud	cdefghijklmnop	1	0.25	0.0357143	1	ghij	2	klmnop	0.036	0.071	0.107	0.107
	4bAV	Determine properties cloud	gh	1	0.25	0					0	0	0	0

File ID	Process ID	Process Name	Processing Epochs	Read/Written	Daily Volume (GB)	Transfer Volume (GB/day)	Repro Factor 1	Repro Epochs 1	Repro Factor 2	Repro Epochs 2	4Q 97	4Q 98	4Q 99	4Q 00
Switch to Include Reprocessing =														
	1		(0 => no reprocessing)	(1 => reprocessing included)							d	h	l	p
	4bAF	Determine cloud pixels	qrstuvwxyz	1	0.25	0.0357143			2	qrstuvwxyz	0	0	0	0
	5aV	Radiative Atmos. Flux	efghijklmnop		0.25	0					0	0	0	0
	5cAV	Radiative Atmos. Flux	ghijklmnop		0.25	0					0	0	0	0
	5aF	Radiative Atmos. Flux	efghijklmnop		0.25	0					0	0	0	0
	5cAF	Radiative Atmos. Flux	ghijklmnop		0.25	0					0	0	0	0
	7aT	File Merge, Interpolate	efghijklmnop		0.25	0								
	7c	File Merge, Interpolate	ghijklmnop		0.25	0					0	0	0	0
TOTAL											0.064	0.1	0.164	0.193
GSFC-to-EDC														
ANC_NMC_SURF	MOD17:L4:1	Production of Photosynthesis	ghijklmnopqrstuvw	1	0.012	0.012	1	klmn	2	opqrstuvw	0	0.012	0.024	0.036
ANC_NMC_PROF	AST_PGE_04	correction--	ghijklmnopqrstuvw	0	0.012	0.012	1	klmn	2	opqrstuvw	0	0.012	0.024	0.036
	AST_PGE_05	correction--	ghijklmnopqrstuvw	0	0.012	0					0	0	0	0
	AST_PGE_09	Polar cloud map	mnopqrstuvw	0	0.012	0					0	0	0	0
ANC_NMC_4DA	MOD17:L4:1	Production of Photosynthesis	ghijklmnopqrstuvw	1	0.012	0.012	1	klmn	2	opqrstuvw	0	0.012	0.024	0.036
ANC_GSFC_O3TOMS	AST_PGE_04	correction--	ghijklmnopqrstuvw	1	0.0005	0.0005	1	klmn	2	opqrstuvw	0	5E-04	0.001	0.002
	AST_PGE_05	correction--	ghijklmnopqrstuvw	1	0.0005	0					0	0	0	0
Anc_EPA_ECOSYSDB	AST_PGE_09	Polar cloud map	mnopqrstuvw	0	0.01	0.0014286	1	mnop	2	qrstuvw	0	0	0	0.003
ANC_NESDIS_SNOWICE	AST_PGE_09	Polar cloud map	mnopqrstuvw	1	0.01	0.01	1	mnop	2	qrstuvw	0	0	0	0.02
MOD03_L1A_G	MOD11:L3:W	Compositing for Land Surface	ghijkl	1	13.455	4.0365	1	kl			0	4.037	8.073	0
	MOD11:L3:W	Compositing for Land Surface	mnopqrstuvw	1	13.455	4.0365	1	mn	2	opqrstuvw	0	0	0	12.11
	MOD09:SUBS	Generation of Level-2 Data	ghijklmnopqrstuvw	1	13.455	0					0	0	0	0
	MOD15:L4:1	Temperature Production of Leaf Area	ghijklmnopqrstuvw	1	13.455	0					0	0	0	0
	MOD34:L3:1	Vegetation Indices (Max of Gridded NDVI & Normalized Difference	ijklmnopqrstuvw	1	13.455	0					0	0	0	0
	MOD40:L3:D	Indices (Max of Gridded NDVI & Normalized Difference	ijklmnopqrstuvw	1	13.455	0					0	0	0	0
MOD09_L2_G	MOD09:13:L	Integrated Snowmelt	ghijklmnopqrstuvw	1	41.2425	12.37275	1	klmn	2	opqrstuvw	0	12.37	24.75	37.12
MOD11_L2_G	MOD11:L2:G	Summary 2-veg	ghijkl	1	12.636	3.7908	1	kl			0	3.791	7.582	0
MOD11_L2_M	MOD11:L2:M	Temperature of Land Surface	mnopqrstuvw	1	12.636	3.7908	1	mn	2	opqrstuvw	0	0	0	11.37
MOD13_L2_G	MOD09:13:L	Remotely Sensed 2-veg	ghijklmnopqrstuvw	1	15.795	4.7385	1	klmn	2	opqrstuvw	0	4.739	9.477	14.22
MOD14_L2_G	MOD14:L2:G	Production and Thermal Inertia	ghijklmnopqrstuvw	1	1.5795	0.47385	1	klmn	2	opqrstuvw	0	0.474	0.948	1.422
MOD30_L2_G	AST_PGE_04	correction--	ghijklmnopqrstuvw	1	7.19199	2.157597	1	klmn	2	opqrstuvw	0	2.158	4.315	6.473
	AST_PGE_05	correction--	ghijklmnopqrstuvw	1	7.19199	0					0	0	0	0
MOD35_L2_G	MOD12:L3:3	Production of Land Surface	ghijklmnopqrstuvw	1	3.1707	0.95121	1	klmn	2	opqrstuvw	0	0.951	1.902	2.854
	MOD09:SUBS	Subsetting of Level-2 Data	ghijklmnopqrstuvw	1	3.1707	0					0	0	0	0
MOD41_L2_H	MOD41:L2:H	Land Surface Resistance	hijklmnopqrstuvw	1	23.6925	7.10775	1	lmno	2	pqrstuvw	0	7.108	14.22	21.32
TOTAL											0	35.67	71.33	107
GSFC-to-JPL														
ANC__NMC_SURF	SWS-L1B_L2	Processing of Level 1B	ijklmnopqrstuvwxyz	1	0.012	0.012	1	mnop	2	qrstuvwxyz	0	0	0.012	0.024
	DFA-SDR2IGDR	Level 2a & b Data	ijklmnopqrstuvwxyz	1	0.012	0					0	0	0	0
ANC__NESDIS_SNOWICE	SWS-L1B_L2	Processing of Level 1B	ijklmnopqrstuvwxyz	1	0.01	0.01	1	mnop	2	qrstuvwxyz	0	0	0.01	0.02
TOTAL											0	0	0.022	0.044
GSFC-to-LaRC														
ANC_GSFC_O3TOMS	12aV	Temperature and Humidity	cd		0.0005	0					0	0	0	0
	12aF	Temperature and Humidity	cdefghijklmnopqrstuvwxyz		0.0005	0.0005	1	ghij	2	klmnopqrstuvwxyz	5E-04	0.001	0.002	0.002
ANC_NMC_PROF	MOPL2-C	Processing Level 2	ghi	1	0.012	0.012					0	0.012	0	0
	MOPL2-E	Processing Level 2	ijklmno	1	0.012	0.012	1	klmn	2	o	0	0	0.024	0
	MOPL2-H	Processing Level 2	pqrstuvw	1	0.012	0.012			2	pqrstuvw	0	0	0	0.036
	12aV	Temperature and Humidity	cd		0.012	0					0	0	0	0
	12aF	Temperature and Humidity	cdef		0.012	0.012	1	ghij	1	klmn	0.012	0	0	0
	12aF	Temperature and Humidity	yz		0.012	0.012			2	yz	0	0	0	0

File ID	Process ID	Process Name	Processing Epochs	Read/Written (n)	Daily Volume (GB)	Transfer Volume (GB/day)	Repro Factor 1	Repro Epochs 1	Repro Factor 2	Repro Epochs 2	4Q 97	4Q 98	4Q 99	4Q 00
Switch to Include Reprocessing =														
ANC_NMC_SURF	1	(0 => no reprocessing)	1	(1 => reprocessing included)							d	h	l	p
ANC_NMC_SURF	MOPL2-C	Level 2 Processing Level 2	ghi	1	0.012	0.012					0	0.012	0	0
	MOPL2-E	Processing Level 2	jklmno	1	0.012	0.012	1	klmn	2	o	0	0	0.024	0
	MOPL2-H	Processing Level 2	pqrstuvwx	1	0.012	0.012			2	pqrstuvwx	0	0	0	0.036
	12aV	and Humidity	cd		0.012	0					0	0	0	0
	12aF	Field and Humidity	cdef		0.012	0.012	1	ghij	1	klmn	0.012	0	0	0
	12aF	Field for epochs of-	yz		0.012	0.012			2	yz	0	0	0	0
ANC_NESDIS_SNOW/ICE	MISP2TC	Atmosphere/Cloud	ghijkl	1	0.01	0.01	1	kl			0	0.01	0.02	0
	MISP2TC	Atmosphere/Cloud	mnop	1	0.01	0.01	1	mn	2	op	0	0	0	0.03
	MISP2TC	Atmosphere/Cloud	qrstuvwxyz	1	0.01	0.01			2	qrstuvwxyz	0	0	0	0
	MISP2AS	Aerosol/Surf Level 2	ghijkl	1	0.01	0					0	0	0	0
	MISP2AS	Aerosol/Surf Level 2	mnop	1	0.01	0					0	0	0	0
	MISP2AS	Aerosol/Surf Level 2	qrstuvwxyz	1	0.01	0					0	0	0	0
	4aV	Determine cloud	cd		0.01	0					0	0	0	0
	4aF	Determine cloud	cdef		0.01	0.01	1	ghij	1	klmn	0.01	0	0	0
	4bAV	Determine cloud	gh		0.01	0					0	0	0	0
	4bAF	Determine cloud	yz		0.01	0.01					0	0	0	0
	5aV	Radiative Atmos. Flux	efghijklmnop		0.01	0					0	0	0	0
	5cAV	Radiative Atmos. Flux	ghijklmnop		0.01	0					0	0	0	0
	5aF	Radiative Atmos. Flux	efghijklmnop		0.01	0					0	0	0	0
	5cAF	Radiative Atmos. Flux	ghijklmnop		0.01	0					0	0	0	0
	7aT	File Multi-Sat Interpolate	efghijklmnop		0.01	0					0	0	0	0
	7c	Merge, Time Interpolate	ghijklmnop		0.01	0					0	0	0	0
CERX01bT	1aT	and convert radiances	cdefghijklmnop		0.000089	0.000089	1	ghij	2	klmnop	9E-05	2E-04	3E-04	3E-04
VIR_L1B-01	4aV	Cloud Properties (Subsystem 4 MODIS)	cd	1	1.394	0					0	0	0	0
	4aF	Cloud Properties (Subsystem 4 MODIS)	cdefghijklmnop	1	1.394	1.394	1	ghij	2	klmnop	1.394	2.788	4.182	4.182
	7aT	Time Interpolate	efghijklmnop		0.01	0					0	0	0	0
MOD02_L1B_G	4bAV	Cloud Properties (Subsystem 4 MODIS)	gh	1	180.1449	0					0	0	0	0
	4bAF	Cloud Properties (Subsystem 4 MODIS)	ghijklmnopqrstuvwxy	1	180.1449	72.41825	1	klmn	2	opqrstuvwxy	0	72.42	144.8	217.3
	MISP1B2	Cloud Properties (Subsystem 4 MODIS)	qrstuvwxyz	1	180.1449	3.7830429			2	qrstuvwxyz	0	0	0	0
MOD03_L1A_G	4bAV	Cloud Properties (Subsystem 4 MODIS)	gh	1	13.455	0					0	0	0	0
	4bAF	Cloud Properties (Subsystem 4 MODIS)	ghijkl	1	13.455	13.455	1	kl	2	mn	0	13.46	26.91	0
	MISP1B2	Cloud Properties (Subsystem 4 MODIS)	qrstuvwxyz	1	13.455	0					0	0	0	0
	MISP2TC	Atmosphere/Cloud	mnop	1	13.455	13.455	1	mn	2	op	0	0	0	40.37
	MISP2TC	Atmosphere/Cloud	qrstuvwxyz	1	13.455	13.455			2	qrstuvwxyz	0	0	0	0
	MISP2AS	Aerosol/Surf Level 2	mnop	1	13.455	0					0	0	0	0
	MISP2AS	Aerosol/Surf Level 2	qrstuvwxyz	1	13.455	0					0	0	0	0
MOD05_L2_G	MISP2AS	Aerosol/Surf Level 2	mnop	1	11.08926	3.276	1	mn	2	op	0	0	0	9.828
	MISP2AS	Aerosol/Surf Level 2	qrstuvwxyz	1	11.08926	3.276			2	qrstuvwxyz	0	0	0	0
MOD06_L2_G	MISP2TC	Atmosphere/Cloud	mnop	1	8.871525	4.1933353	1	mn	2	op	0	0	0	12.58
	MISP2TC	Atmosphere/Cloud	qrstuvwxyz	1	8.871525	4.1933353			2	qrstuvwxyz	0	0	0	0
	MOPL2-E	Level 2 Processing	jkl	1	8.871525	4.1933353	1	kl			0	0	8.387	0
	MOPL2-H	Processing	pqrstuvwx	1	8.871525	0					0	0	0	0
MOD30_L2_G	MISP2AS	Aerosol/Surf Level 2	mnop	1	7.19199	3.3994635	1	mn	2	op	0	0	0	10.2
	MISP2AS	Aerosol/Surf Level 2	qrstuvwxyz	1	7.19199	3.3994635			2	qrstuvwxyz	0	0	0	0
	MOPL2-E	Level 2 Processing	jkl	1	7.19199	3.3994635	1	kl			0	0	6.799	0
	MOPL2-H	Processing	pqrstuvwx	1	7.19199	0					0	0	0	0
MOD35_L2_G	MISP2TC	Atmosphere/Cloud	mnop	1	3.1707	0.9366913	1	mn	2	op	0	0	0	2.81
	MISP2TC	Atmosphere/Cloud	qrstuvwxyz	1	3.1707	0.9366913			2	qrstuvwxyz	0	0	0	0
DAS_SFC_DATA	MISP2TC	Atmosphere/Cloud	ghijkl	1	0.048384	0.048384	1	kl			0	0.048	0.097	0

File ID	Process ID	Process Name	Processing Epochs	Read/Written	Daily Volume (GB)	Transfer Volume (GB/day)	Repro Factor 1	Repro Epochs 1	Repro Factor 2	Repro Epochs 2	4Q 97	4Q 98	4Q 99	4Q 00
Switch to Include Reprocessing = 1 (0 => no reprocessing) 1 => reprocessing included)											d	h	l	p
	MISP2TC	of-Cloud	mnop	ctj	0.048384	0.048384	1	mn	2	op	0	0	0	0.145
	MISP2TC	of-Cloud	qrstuvxyz	1	0.048384	0.048384			2	qrstuvxyz	0	0	0	0
	MISP2AS	Aerosol/Surf	ghijkl	1	0.048384	0					0	0	0	0
	MISP2AS	Aerosol/Surf	mnop	1	0.048384	0					0	0	0	0
	MISP2AS	Aerosol/Surf	qrstuvxyz	1	0.048384	0					0	0	0	0
DAS_PROG_PRS	MISP2TC	of-Cloud	mnop	1	0.089664	0					0	0	0	0
	MISP2TC	of-Cloud	qrstuvxyz	1	0.089664	0					0	0	0	0
	MISP2AS	Aerosol/Surf	ghijkl	1	0.089664	0.089664	1	kl	2		0	0.09	0.179	0
	MISP2AS	Aerosol/Surf	mnop	1	0.089664	0.089664	1	mn	2	op	0	0	0	0.269
	MISP2AS	Aerosol/Surf	qrstuvxyz	1	0.089664	0.089664			2	qrstuvxyz	0	0	0	0
TOTAL											1.429	88.83	191.5	297.7

GSFC-to-MSFC

TMI_Level1A	TSDIS	Products TSDIS	cdefghijklmnop	1	0.11893	0.11893	2	cdefghijklmn			0.357	0.357	0.357	0.357
PR_Level1A	TSDIS	Products TSDIS	cdefghijklmnop	1	1.14568	1.14568	2	cdefghijklmn			3.437	3.437	3.437	3.437
TMI_L1B-11	TSDIS	Products TSDIS	cdefghijklmnop	1	0.1047	0.1047	2	cdefghijklmn			0.314	0.314	0.314	0.314
GrdRadar_L1B-51	TSDIS	Products TSDIS	cdefghijklmnop	1	0.755	0.755	2	cdefghijklmn			2.265	2.265	2.265	2.265
GrdRadar_L1C-51	TSDIS	Products TSDIS	cdefghijklmnop	1	3.5701	3.5701	2	cdefghijklmn			10.71	10.71	10.71	10.71
PR_L1B-21	TSDIS	Products TSDIS	cdefghijklmnop	1	1.14515	1.14515	2	cdefghijklmn			3.435	3.435	3.435	3.435
PR_L1C-21	TSDIS	Products TSDIS	cdefghijklmnop	1	1.14515	1.14515	2	cdefghijklmn			3.435	3.435	3.435	3.435
TMI_PROF_L2A-12	TSDIS	Products TSDIS	cdefghijklmnop	1	2.10952	2.10952	2	cdefghijklmn			6.329	6.329	6.329	6.329
PR_SIGMA_L2A-21	TSDIS	Products TSDIS	cdefghijklmnop	1	0.07365	0.07365	2	cdefghijklmn			0.221	0.221	0.221	0.221
PR_QUALT_L2A-23	TSDIS	Products TSDIS	cdefghijklmnop	1	0.04881	0.04881	2	cdefghijklmn			0.146	0.146	0.146	0.146
PR_PROF_L2A-25	TSDIS	Products TSDIS	cdefghijklmnop	1	0.76581	0.76581	2	cdefghijklmn			2.297	2.297	2.297	2.297
TRMM_COMB_L2B-31	TSDIS	Products TSDIS	cdefghijklmnop	1	0.6952	0.6952	2	cdefghijklmn			2.086	2.086	2.086	2.086
TMI_EMISS_L3A-11	TSDIS	Products TSDIS	cdefghijklmnop	1	0.000002	0.000002	2	cdefghijklmn			6E-06	6E-06	6E-06	6E-06
PR_PROF_L3A-25	TSDIS	Products TSDIS	cdefghijklmnop	1	0.00007	0.00007	2	cdefghijklmn			2E-04	2E-04	2E-04	2E-04
PR_PROF_L3A-26	TSDIS	Products TSDIS	cdefghijklmnop	1	0.000002	0.000002	2	cdefghijklmn			6E-06	6E-06	6E-06	6E-06
TRMM_COMB_L3B-31	TSDIS	Products TSDIS	cdefghijklmnop	1	0.00045	0.00045	2	cdefghijklmn			0.001	0.001	0.001	0.001
TRMM_COMB_L3B-42	TSDIS	Products TSDIS	cdefghijklmnop	1	0.000144	0.000144	2	cdefghijklmn			4E-04	4E-04	4E-04	4E-04
TRMM_COMB_L3B-43	TSDIS	Products TSDIS	cdefghijklmnop	1	0.000216	0.000216	2	cdefghijklmn			6E-04	6E-04	6E-04	6E-04
GrdRadar_L2A-52i	TSDIS	Products TSDIS	cdefghijklmnop	1	0.0000034	0.0000034	2	cdefghijklmn			1E-05	1E-05	1E-05	1E-05
GrdRadar_L2A-53	TSDIS	Products TSDIS	cdefghijklmnop	1	0.1946	0.1946	2	cdefghijklmn			0.584	0.584	0.584	0.584
GrdRadar_L2A-54	TSDIS	Products TSDIS	cdefghijklmnop	1	0.1946	0.1946	2	cdefghijklmn			0.584	0.584	0.584	0.584
GrdRadar_L2A-55	TSDIS	Products TSDIS	cdefghijklmnop	1	1.189	1.189	2	cdefghijklmn			3.567	3.567	3.567	3.567
GrdRadar_L2A-56	TSDIS	Products TSDIS	cdefghijklmnop	1	0.002477	0.002477	2	cdefghijklmn			0.007	0.007	0.007	0.007
GrdRadar_L2A-57	TSDIS	Products TSDIS	cdefghijklmnop	1	0.0005767	0.0005767	2	cdefghijklmn			0.002	0.002	0.002	0.002
GrdRadar_L3A-53	TSDIS	Products TSDIS	cdefghijklmnop	1	0.00003	0.00003	2	cdefghijklmn			9E-05	9E-05	9E-05	9E-05
GrdRadar_L3A-54	TSDIS	Products TSDIS	cdefghijklmnop	1	0.000005	0.000005	2	cdefghijklmn			2E-05	2E-05	2E-05	2E-05
GrdRadar_L3A-55	TSDIS	Products TSDIS	cdefghijklmnop	1	2.667E-05	2.667E-05	2	cdefghijklmn			8E-05	8E-05	8E-05	8E-05
TMI-Browse	TSDIS	Products TSDIS	cdefghijklmnop	1	0.0165	0.0165	2	cdefghijklmn			0.05	0.05	0.05	0.05
PR -Browse	TSDIS	Products TSDIS	cdefghijklmnop	1	0.04	0.04	2	cdefghijklmn			0.12	0.12	0.12	0.12
TRMM_COMB_Browse	TSDIS	Products TSDIS	cdefghijklmnop	1	0.0114	0.0114	2	cdefghijklmn			0.034	0.034	0.034	0.034
GV_Browse	TSDIS	Products TSDIS	cdefghijklmnop	1	0.00044	0.00044	2	cdefghijklmn			0.001	0.001	0.001	0.001
TOTAL											39.98	39.98	39.98	39.98

GSFC-to-NSIDC

ANC_DCW_LAND/SEA	MOD33:L3:W	Compositing	ghijklmnopqrstuvwx	0.3	0.08	0.0114286	1	klmn	2	opqrstuvwx	0	0.011	0.023	0.034
MOD03_L1A_G	MOD10:L3:D	of Gridded Snow Cover	ghijklmnopqrstuvwx	1	13.455	2.691	1	klmn	2	opqrstuvwx	0	2.691	5.382	8.073
	MOD29:L3:D	of Gridded Snow Cover	ghijklmnopqrstuvwx	1	13.455	0					0	0	0	0
MOD10_L2_G	MOD10:L2:G	2-Production Sea Ice Max of Snow Cover	ghijklmnopqrstuvwx	1	0.4095	0.0819	1	klmn	2	opqrstuvwx	0	0.082	0.164	0.246

File ID	Process ID	Process Name	Processing Epochs	Read/Written (MB)	Daily Volume (GB)	Transfer Volume (GB/day)	Repro Factor 1	Repro Epochs 1	Repro Factor 2	Repro Epochs 2	4Q 97	4Q 98	4Q 99	4Q 00
Switch to Include Reprocessing = MOD29_L2_G (0 => no reprocessing, 1 => reprocessing included)											d	h	l	p
TOTAL					0.78975	0.15795	1	klmn	2	opqrstuvwx	0	0.158	0.316	0.474
											0	2.942	5.885	8.827
JPL-to-GSFC														
SWS-2B	DAS_FINAL_ANALYSIS	DAO Final Analysis	ijklmnopqrstuvwxyz		0.047	0.047	1	mno	2	qrstuvwxy	0	0	0.047	0.094
TOTAL											0	0	0.047	0.094
JPL-to-NSIDC														
DFA04	DFA-ICE_SHEETS	Ice Sheet Elevation Maps	ijklmnopqrstuvwxyz	1	0.0027397	0.0027397	1	mno	2	qrstuvwxy	0	0	0.003	0.005
TOTAL											0	0	0.003	0.005
LaRC-to-EDC														
MIS-2AS	AST_PGE_04	correction--VNIR_SWIR	ghijklmnopqrstuvwx	1	4.934	1.4802	1	klmn	2	opqrstuvwx	0	1.48	2.96	4.441
	AST_PGE_05	correction--TIR	ghijklmnopqrstuvwx	1	4.934	0					0	0	0	0
MIS-AC	AST_PGE_04	correction--VNIR_SWIR	ghijklmnopqrstuvwx	1	0.0016	0.00048	1	klmn	2	opqrstuvwx	0	5E-04	1E-03	0.001
	AST_PGE_05	correction--TIR	ghijklmnopqrstuvwx	1	0.0016	0					0	0	0	0
MOD09_L3:16DY:G	MOD09_L3:16DY:G	BRDF/Albedo	ghijklmnopqrstuvwx	1	0.0197	0.0197	1	klmn	2	opqrstuvwx	0	0.02	0.039	0.059
TOTAL											0	1.5	3.001	4.501
LaRC-to-GSFC														
CER11T	DAS_FINAL_ANALYSIS	DAO Final Analysis	ijklmnopqrstuvwxyz		3.46	3.46	1	mno	2	qrstuvwxy	0	0	3.46	6.92
CER11A1	DAS_FINAL_ANALYSIS	DAO Final Analysis	ijklmnopqrstuvwxyz		3.46	3.46	1	mno	2	qrstuvwxy	0	0	3.46	6.92
CER11A2	DAS_FINAL_ANALYSIS	DAO Final Analysis	ijklmnopqrstuvwxyz		3.46	3.46	1	mno	2	qrstuvwxy	0	0	3.46	6.92
CER07aT	DAS_FINAL_ANALYSIS	DAO Final Analysis	ijklmnopqrstuvwxyz		0.53	0.53	1	mno	2	qrstuvwxy	0	0	0.53	1.06
CER07aA	DAS_FINAL_ANALYSIS	DAO Final Analysis	ijklmnopqrstuvwxyz		0.53	0.53	1	mno	2	qrstuvwxy	0	0	0.53	1.06
CER07cTA	DAS_FINAL_ANALYSIS	DAO Final Analysis	ijklmnopqrstuvwxyz		0.08	0.08	1	mno	2	qrstuvwxy	0	0	0.08	0.16
TOTAL											0	0	11.52	23.04
MSFC-to-GSFC (Note: TRMM is different formula)														
TMI_Level1A	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.11893	0.11893	2	cdefghijklmn			0.238	0.238	0.238	0.238
PR_Level1A	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	1.14568	1.14568	2	cdefghijklmn			2.291	2.291	2.291	2.291
TMI_L1B-11	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.1047	0.1047	2	cdefghijklmn			0.209	0.209	0.209	0.209
GrdRadar_L1B-51	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.755	0.755	2	cdefghijklmn			1.51	1.51	1.51	1.51
GrdRadar_L1C-51	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	3.5701	3.5701	2	cdefghijklmn			7.14	7.14	7.14	7.14
PR_L1B-21	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	1.14515	1.14515	2	cdefghijklmn			2.29	2.29	2.29	2.29
PR_L1C-21	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	1.14515	1.14515	2	cdefghijklmn			2.29	2.29	2.29	2.29
TMI_PROF_L2A-12	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	2.10952	2.10952	2	cdefghijklmn			4.219	4.219	4.219	4.219
PR_SIGMA_L2A-21	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.07365	0.07365	2	cdefghijklmn			0.147	0.147	0.147	0.147
PR_QUALT_L2A-23	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.04881	0.04881	2	cdefghijklmn			0.098	0.098	0.098	0.098
PR_PROF_L2A-25	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.76581	0.76581	2	cdefghijklmn			1.532	1.532	1.532	1.532
TRMM_COMB_L2B-31	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.6952	0.6952	2	cdefghijklmn			1.39	1.39	1.39	1.39
TMI_EMIS_L3A-11	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.000002	0.000002	2	cdefghijklmn			4E-06	4E-06	4E-06	4E-06
PR_PROF_L3A-25	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.00007	0.00007	2	cdefghijklmn			1E-04	1E-04	1E-04	1E-04
PR_PROF_L3A-26	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.000002	0.000002	2	cdefghijklmn			4E-06	4E-06	4E-06	4E-06
TRMM_COMB_L3B-31	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.00045	0.00045	2	cdefghijklmn			9E-04	9E-04	9E-04	9E-04
TRMM_COMB_L3B-42	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.000144	0.000144	2	cdefghijklmn			3E-04	3E-04	3E-04	3E-04
TRMM_COMB_L3B-43	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.000216	0.000216	2	cdefghijklmn			4E-04	4E-04	4E-04	4E-04
GrdRadar_L2A-52i	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.0000034	0.0000034	2	cdefghijklmn			7E-06	7E-06	7E-06	7E-06
GrdRadar_L2A-53	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.1946	0.1946	2	cdefghijklmn			0.389	0.389	0.389	0.389
GrdRadar_L2A-54	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.1946	0.1946	2	cdefghijklmn			0.389	0.389	0.389	0.389
GrdRadar_L2A-55	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	1.189	1.189	2	cdefghijklmn			2.378	2.378	2.378	2.378
GrdRadar_L2A-56	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.002477	0.002477	2	cdefghijklmn			0.005	0.005	0.005	0.005
GrdRadar_L2A-57	TSDIS	TSDIS Reprocessing	cdefghijklmnop	1	0.0005767	0.0005767	2	cdefghijklmn			0.001	0.001	0.001	0.001

File ID	Process ID	Process Name	Processing Epochs	Read/Written	Daily Volume (GB)	Transfer Volume (GB/day)	Repro Factor 1	Repro Epochs 1	Repro Factor 2	Repro Epochs 2	4Q 97	4Q 98	4Q 99	4Q 00
Switch to Include Reprocessing =														
(0 => no reprocessing) (1 => reprocessing included)														
GrdRadar_L3A-53	TSDIS	TSDIS	cdefghijklmnop	1	0.00003	0.00003	2	cdefghijklmnop			6E-05	6E-05	6E-05	6E-05
GrdRadar_L3A-54	TSDIS	Reprocessing TSDIS	cdefghijklmnop	1	0.000005	0.000005	2	cdefghijklmnop			1E-05	1E-05	1E-05	1E-05
GrdRadar_L3A-55	TSDIS	Reprocessing TSDIS	cdefghijklmnop	1	2.667E-05	2.667E-05	2	cdefghijklmnop			5E-05	5E-05	5E-05	5E-05
TMI-Browse	TSDIS	Reprocessing TSDIS	cdefghijklmnop	1	0.0165	0.0165	2	cdefghijklmnop			0.033	0.033	0.033	0.033
PR -Browse	TSDIS	Reprocessing TSDIS	cdefghijklmnop	1	0.04	0.04	2	cdefghijklmnop			0.08	0.08	0.08	0.08
TRMM_COMB_Browse	TSDIS	Reprocessing TSDIS	cdefghijklmnop	1	0.0114	0.0114	2	cdefghijklmnop			0.023	0.023	0.023	0.023
GV_Browse	TSDIS	Reprocessing TSDIS	cdefghijklmnop	1	0.00044	0.00044	2	cdefghijklmnop			9E-04	9E-04	9E-04	9E-04
MSFC_SSM/L_BT	TSDIS	Reprocessing Processing and	cdefghijklmnop	1	0.16	0.16	2	cdefghijklmnop			0.48	0.48	0.48	0.48
ANC_NESDIS_GPI	TSDIS	Reprocessing	cdefghijklmnop	1	0.0333333	0.0333333	2	cdefghijklmnop			0.1	0.1	0.1	0.1
ANC_GPCC_RainProd	TSDIS		cdefghijklmnop	1	0.0333333	0.0333333	2	cdefghijklmnop			0.1	0.1	0.1	0.1
TOTAL											27.34	27.34	27.34	27.34
MSFC-to-LaRC														
TMI_PROF_L2A-12	4aV	Properties (Subsystem 4 - MODIS)	cd	1	1.378	0.00					0	0	0	0
	4aF	Properties (Subsystem 4 - MODIS)	cdefghijklmnop	1	1.378	1.378	1	ghij	2	klmnop	1.378	2.756	4.134	4.134
	4bAV	Properties (Subsystem 4 - MODIS)	gh	1	1.378	0.00					0	0	0	0
	4bAF	Properties (Subsystem 4 - MODIS)	qrstuvwxyz	1	1.378	1.378			2	qrstuvwxyz	0	0	0	0
	4bPV	Properties (Subsystem 4 - MODIS)	qr	1	1.378	0					0	0	0	0
	4bPF	Properties (Subsystem 4 - MODIS)	qrstuvwxyz	1	1.378	0					0	0	0	0
TOTAL											1.378	2.756	4.134	4.134
NSIDC-to-EDC														
MOD33_L3_WK_G	AST_PGE_09	Polar cloud map	mnopqrstuvw	1	0.3651429	0					0	0	0	0
	MOD12:COMP	Compositing and Production of	ghijklmnopqrstuvw	1	0.3651429	0.3651429	1	klmn	2	opqrstuvw	0	0.365	0.73	1.095
TOTAL											0	0.365	0.73	1.095
NSIDC-to-GSFC														
MOD10_L2_I	MOD11:L2:M	of Land Surface Temperature	mnopqrstuvw	1	0.4095	0	1	mnop	2	qrstuvw	0	0	0	0
TOTAL											0	0	0	0

Appendix B. Issues To be Resolved

This appendix serves as placeholder for documenting various issues that need to be addressed prior to finalizing DID 223. This includes issues related to defining the content and format of DID 223, as well as its delivery schedule. Additionally, issues related to coordination between ECS and other responsible parties as far as setting up, populating and extracting data from the Nascom Requirements database, protocol overheads, or any other relevant issue is documented here. Once these issues are resolved they will be incorporated into the main body of DID 223 and removed from this tracking list. Furthermore, issues raised resulting from this white paper distribution will be included in this appendix until a resolution is made. Currently, the following issues need refinement/resolution:

- Inclusion of a separate column that allows the Nascom Requirements database entries to be sorted by Instrument
- Inclusion of circuit upgrade/availability dates to allow connectivity and performance testing required to support data flows between the various nodes.
- Better definition and rationale for EDOS/ECOM overhead factor
- Better definition and rationale for EDOS contingency factor

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Abbreviations and Acronyms

ACRIMSAT	Active Cavity Radiometer Irradiance Monitor Satellite
ADC	Affiliated Data Center
AHWGP	Ad Hoc Working Group For Production
AI&T	Algorithm Integration & Test
ASF	Alaska Synthetic Aperture Radar Facility
ATM	Asynchronous Transfer Mode
bps	Bits per second
CCR	Configuration Change Request
CDRL	Contract Data Requirements List
CERES	Clouds and Earth's Radiant Energy System
CSMS	Communications and Systems Management Segment
DAAC	Distributed Active Archive Center
DCN	Document Change Notice
ECS	EOSDIS Core System
EDC	EROS Data Center (DAAC)
EOC	EOS Operations Center (ECS)
EOSDIS	Earth Observing System Data and Information System
ESDIS	Earth Science Data and Information System (GSFC)
ESN	EOSDIS Science Network
FIX	Federal Internet Exchange
FOS	Flight Operations Segment (ECS)
GB	gigabyte (10^9)
GFE	Government Furnished Equipment
GFP	Government Furnished Property
GSFC	Goddard Space Flight Center
GV	TRMM Ground Validation Data
HIRS/2	High-Resolution Infrared Sounder/Version 2
IAS	Image Assessment System (Landsat)
ICC	Instrument Control Center (ECS) (ASTER)

IDR	Incremental Design Review
IP	International Partner; Internet Protocol
IPA	Inter Project Agreement
IR-1	Interim Release-1
IRD	Interface Requirements Document
IST	Instrument Support Terminal (ECS)
JPL	Jet Propulsion Laboratory
Kbps	Kilobits per second
LaRC	Langley Research Center
LIS	Lightning Imaging Sensor
M&O	Maintenance & Operations
Mbps	Megabits per second
MDT	Mean Downtime
MISR	Multi-Angle Imaging SpectroRadiometer
MODIS	Moderate-Resolution Imaging SpectroRadiometer
MOPITT	Measurements of Pollution in the Troposphere
MSFC	Marshall Space Flight Center
MTTR	Mean Time To Repair
NASA	National Aeronautics and Space Administration
Nascom	NASA Communications
NCAR	National Center for Atmospheric Research
NOAA	National Oceanic and Atmospheric Administration
NOC	Network Operations Center
NOLAN	Nascom Operational Local Area Network
NSI	NASA Science Internet
NSIDC	National Snow and Ice Data Center (DAAC)
ORNL	Oak Ridge National Laboratory (DAAC)
PACOR	Packet Processor
PDR	Preliminary Design Review
PI	Principal Investigator
PI/TL	Principal Investigator/Team Leader

QC	Quality Control
RMA	Reliability, Maintainability, Availability
RRR	Release Readiness Review
SBUV/2	Solar Backscatter Ultraviolet/version 2
SCF	Science Computing Facility
SMC	System Management Center (ECS)
SSM/I	Special Sensor for Microwave/Imaging (DMSP)
SWS	Sea Winds
TBD	To Be Determined
TL	Team Leader
TMI	TRMM Microwave Imager
TRMM	Tropical Rainfall Measuring Mission
TSDIS	TRMM Science Data & Information System
VIRS	Visible Infrared Scanner (TRMM)
WAN	Wide Area Network

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